

Optimizing the Role of the Community and Village Government in Sustainable Mangrove Restoration in Simpang Tiga Jaya Village

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ARTICLE INFO

Keywords: Mangrove Restoration, Community Empowerment, Coastal Resilience, Public Administration, Environmental Governance

Received : 23, May

Revised : 27, June

Accepted: 20, July

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ABSTRACT

This community service activity aims to optimize the role of the community and the village government in sustainable mangrove restoration in Simpang Tiga Jaya Village, Tulung Selapan District, Ogan Komering Ilir Regency. The main problems faced by the community include coastal abrasion, damage to mangrove ecosystems, and flash floods that have an impact on the socio-economic conditions of coastal communities. The implementation method is carried out through a participatory approach with socialization activities, mangrove restoration assistance, environmental management training, and the application of appropriate technology based on coastal conservation. The program will be carried out during January-March 2025 by involving fishermen groups, farmer groups, village governments, and students. The results of the activity show that there is an increase in community participation in mangrove rehabilitation, increased environmental awareness, and strengthening the capacity of village institutions in the sustainable management of coastal areas.

INTRODUCTION

Coastal areas are strategic areas that have ecological, social, and economic functions for people's lives. This area is a space for interaction between human activities and natural resources that are very dynamic. Coastal ecosystems such as mangroves, seagrass beds, and coral reefs have an important contribution to maintaining environmental balance and supporting the sustainability of coastal communities' lives (Fitria, 2021). One of the important ecosystems in the coastal area is mangrove forests. Mangroves have an ecological function as a natural protector of the coast from abrasion, a barrier to seawater intrusion, a habitat for various marine life, and an effective absorber of carbon emissions in climate change mitigation (Murdiyarso et al., 2010). In addition, mangroves also contribute to increasing the fishery productivity of coastal communities.

Indonesia is the country with the largest mangrove area in the world. However, the existence of mangroves currently faces serious threats due to human activities such as illegal logging, pond land conversion, coastal reclamation, and environmental pollution (Ario et al., 2016). This condition causes the degradation of coastal ecosystems which has an impact on the decline of environmental quality and community welfare. Mangrove damage is not only an environmental problem, but also has an impact on the social and economic aspects of coastal communities. The decline in mangrove area has led to a reduction in the habitat of fish, crabs, and other marine life that has been the source of livelihood for fishing communities (Agussalim & Hartoni, 2014). In addition, mangrove damage also increases the risk of coastal abrasion and flash flooding. Coastal abrasion causes the loss of residential land, ponds, and coastal community infrastructure. This condition is further exacerbated by the increasing intensity of global climate change which affects the stability of coastal areas (Fitria, 2021).

Ogan Komering Ilir Regency is one of the coastal areas in South Sumatra Province that has a fairly large mangrove ecosystem. The coastal area of Ogan Komering Ilir Regency has great potential in the fisheries, aquaculture, and environmental services sectors based on coastal ecosystems (Firyadi et al., 2018). However, coastal areas in Ogan Komering Ilir Regency also face various environmental problems due to mangrove degradation and land use change. This environmental damage has an impact on increasing coastal abrasion and decreasing the quality of the coastal environment (Salminah & Alviya, 2019).

Simpang Tiga Jaya Village, Tulung Selapan District, is one of the coastal villages that is directly affected by the destruction of the mangrove ecosystem. Most of the people in this village depend on the fisheries and agriculture sectors of swampland, so the sustainability of the coastal environment is an important factor in supporting people's lives. Based on the results of field observations, the destruction of mangroves in Simpang Tiga Jaya Village is caused by illegal logging, land conversion into ponds, and low public awareness of the importance of environmental conservation. These activities have caused a significant reduction in mangrove areas.

Mangrove damage in Simpang Tiga Jaya Village has an impact on increasing coastal abrasion and flash flooding. This condition has resulted in damage to community settlements, disruption of economic activities, and decreased fishermen's catches. In addition to environmental factors, the low capacity of the community in managing the coastal environment is also one of the main problems. Some people still view mangroves as an area that has no economic value, so awareness of environmental conservation is still low.

Coastal environmental problems require an integrated approach through the involvement of various parties. Village governments, communities, universities, and other stakeholders need to build collaboration in sustainable coastal environmental management.

From the perspective of Public Administration, coastal environmental management is part of governance that emphasizes community participation and collaborative governance. Village governments have an important role in building local policies that support environmental conservation. Collaborative governance is an approach that emphasizes the importance of cooperation between actors in solving public problems. This approach is relevant in coastal environmental management because the problem of mangrove damage cannot be solved by the government alone.

The village government has a strategic position as a facilitator in encouraging community participation in environmental conservation programs. The village government also has the authority to integrate environmental programs into village development policies. In addition to village governments, coastal communities also have an important role in maintaining the sustainability of mangrove ecosystems. Community participation is a major factor in the success of community-based mangrove restoration programs.

Mangrove restoration is one of the environmental rehabilitation efforts aimed at restoring the ecological function of coastal areas. Restoration activities are carried out through the replanting of mangroves in damaged areas (Siry et al., 2016). Mangrove restoration not only provides ecological benefits, but also socioeconomic benefits for coastal communities. The existence of mangroves is able to increase fisheries productivity and support the development of an environment-based economy. Mangrove restoration efforts require appropriate technological support that is appropriate to the local conditions of coastal communities. Simple technology that is easy for the community to apply can increase the effectiveness of environmental rehabilitation.

One of the innovations applied in this service activity is the use of ajir nibung and ironwood in mangrove planting. The use of the ajir aims to increase the resistance of mangrove seedlings to ocean currents and coastal abrasion. In addition to mangrove restoration, community service activities also develop community-based waste management. Waste management is important because pollution of the coastal environment is one of the causes of declining the quality of mangrove ecosystems (Kurniawan & Astuti, 2020).

Community-based environmental management is an approach that places the community as the main subject of development. This approach aims to increase public awareness and capacity in maintaining environmental sustainability.

Community service activities are part of the implementation of the tridharma of higher education. Through service activities, universities can contribute to solving social and environmental problems faced by the community. Universities have a strategic role in the development of innovations and appropriate technologies based on the needs of the community. In addition, student involvement in community service activities is also a means of direct social learning.

This service program is carried out through a participatory approach by actively involving the community in all stages of activities. The participatory approach aims to build a sense of community ownership of mangrove restoration programs. The service activities involved fishermen groups, farmer groups, village governments, students, and accompanying lecturers. The collaboration is expected to strengthen the sustainability of coastal environmental management programs. This service program also supports the achievement of the Sustainable Development Goals (SDGs), especially the 13th goal on handling climate change and the 14th goal on the protection of marine and coastal ecosystems. In addition to supporting the SDGs, this activity is also in line with the direction of national development which emphasizes the importance of sustainable development and strengthening the environmental resilience of coastal communities.

Through this service activity, it is hoped that the capacity of the community and village government will be strengthened in the management of the coastal environment based on community participation. In addition, this activity is expected to be able to increase public awareness of the importance of mangrove conservation.

Based on this background, this service activity aims to optimize the role of the community and the village government in sustainable mangrove restoration in Simpang Tiga Jaya Village, Tulung Selapan District, Ogan Komering Ilir Regency as an effort to increase coastal resilience and strengthen community-based environmental governance.

IMPLEMENTATION AND METHODS

Location and Time of Implementation

The community service activity was carried out in Simpang Tiga Jaya Village, Tulung Selapan District, Ogan Komering Ilir Regency, South Sumatra. The implementation of the activity will be carried out from January to March 2025.

Activity Participants

Participants in the activity consisted of:

- The Sinar Pelajaran Fishermen Group is 20 people.
- The Waspada Farmers Group is 20 people.
- Simpang Tiga Jaya Village Government.
- Students and accompanying lecturers.

Implementation Method

The method of implementing activities uses a participatory approach by actively involving the community in all stages of the activity. The stages of the activity include:

1. Identify Problems

The initial stage is carried out through field observation and discussions with the community to identify the main problems of the coastal area. The identification results show several main problems in the form of coastal abrasion, mangrove damage, environmental pollution, and low community capacity in coastal environmental management.

2. Environmental Socialization and Education

The socialization was carried out to increase public understanding of the importance of mangrove conservation and climate change mitigation. The material provided includes the ecological function of mangroves, coastal environmental management, and environment-based community empowerment.

3. Mangrove Restoration

Restoration activities are carried out through planting mangrove seedlings in coastal areas that have been damaged. Planting is carried out using ajir nibung wood and ironwood as a support for the seedlings so that they are more resistant to sea currents.

4. Appropriate Technology Training

Training was given to the community on environment-based waste management and the use of simple coastal disaster early detection tools. This activity aims to increase community capacity in protecting the environment and reducing disaster risk.

5. Mentoring and Evaluation

Assistance is carried out periodically to ensure the sustainability of mangrove restoration programs and strengthen community participation in coastal environmental management.

RESULTS AND DISCUSSION

Condition of the Coastal Area of Simpang Tiga Jaya Village

Simpang Tiga Jaya Village is a coastal area that has the potential for natural resources in the form of fisheries, aquaculture, and mangrove ecosystems. However, the condition of the coastal environment has decreased due to mangrove destruction and land use changes.

Table 1. Main Problems of the Coastal Area of Simpang Tiga Jaya Village

Yes	Problem Type	Impact
1	Coastal abrasion	Destruction of settlements and ponds
2	Mangrove damage	Decline in marine life habitat
3	Flood	Disruption of community activities
4	Coastal litter	Environmental pollution

The environmental damage has a direct impact on the socio-economic life of coastal communities, most of whom work as fishermen and pond farmers.

Optimizing the Role of Village Government

The Simpang Tiga Jaya Village Government has a strategic position in supporting the implementation of sustainable mangrove restoration programs. As the closest government institution to the community, the village government plays a role in building coordination, mobilizing citizen participation, and ensuring the sustainability of environmental conservation programs in coastal areas. The involvement of the village government is an important factor in creating environmental governance based on community participation. In the early stages of service activities, the village government plays an active role in the process of identifying coastal environmental problems. The village government together with the service team conducted a mapping of areas that experienced mangrove damage, coastal abrasion, and areas affected by flash floods. This data is the basis for determining priority locations for mangrove restoration.

The village government also provides administrative support for the implementation of community service activities. This support is realized through the issuance of activity recommendation letters, facilitation of coordination with community groups, and the provision of locations for socialization and training activities.

From the perspective of Public Administration, the role of the village government is not only limited to regulators, but also as a facilitator of participatory development. The village government is the link between the interests of the community and the empowerment programs implemented by universities and other stakeholders.

The socialization of mangrove restoration activities carried out by the village government together with the service team was able to increase public awareness of the importance of protecting coastal ecosystems. Before the program was implemented, some people still considered mangroves to have no significant economic benefits. However, after environmental education, the community began to understand the function of mangroves in protecting coastal areas.

The village government also plays a role in integrating the mangrove restoration program into the village development agenda. This step is important so that environmental conservation programs are not only temporary, but can be part of sustainable development policies at the village level. In addition, the village government seeks to strengthen coordination between community groups such as fishermen and farmer groups in supporting mangrove restoration activities. The collaboration creates social synergy that strengthens the success of coastal environmental management programs. The village government also encourages the implementation of mutual cooperation activities in mangrove planting. The culture of mutual cooperation that develops in the community is an important social capital in supporting the success of community-based environmental restoration programs.

In the implementation of mangrove restoration, the village government plays a role in determining priority planting areas based on the level of environmental damage. Areas that experience severe abrasion and damage to

mangrove ecosystems are the main locations for environmental rehabilitation. The village government also supports the implementation of appropriate technology training for coastal communities. This support is carried out by facilitating training places and coordinating community involvement in environmental management capacity building activities.

The community-based waste management program developed in service activities also received support from the village government. The village government encourages the community to start sorting household waste to reduce pollution of the coastal environment. In an effort to mitigate coastal disasters, the village government also supports the development of community-based simple early detection tools. The involvement of the village government in disaster mitigation shows that there is attention to strengthening the resilience of coastal areas in a sustainable manner.

The success of the mangrove restoration program is inseparable from the ability of the village government to build effective communication with the community. The persuasive approach taken by the village government is able to increase community participation in various environmental conservation activities. This service activity shows that strengthening the capacity of the village government is an important factor in supporting coastal environmental governance. Village governments that have good institutional capacity will be better able to manage environment-based development programs in a sustainable manner.

Empowerment of Coastal Communities

Empowering coastal communities is one of the main focuses in community service activities in Simpang Tiga Jaya Village. The empowerment program is carried out as an effort to increase community capacity in maintaining the sustainability of the coastal environment while strengthening the economic resilience of communities that depend on coastal natural resources. Most of the people of Simpang Tiga Jaya Village work as traditional fishermen and swamp farmers. Community dependence on coastal resources causes environmental damage that directly affects the socio-economic conditions of the community. Therefore, strengthening community capacity is an important step in supporting sustainable environmental management.

Community empowerment activities are carried out through a participatory approach by actively involving the community in all stages of the program. This approach aims to build a sense of community ownership of mangrove restoration activities so that the sustainability of the program can be maintained.

In the early stages of the activity, the community was given socialization about the importance of mangrove ecosystems for coastal life. The socialization material includes the function of mangroves as coastal protectors, habitats for marine life, carbon sinks, and sources of economic support for coastal communities. The results of the activity show that before the program was implemented, some people still had a low understanding of the importance of mangrove conservation. Some people even use mangrove areas for firewood needs and pond land clearing.

After socialization and environmental education, there has been an increase in public understanding of the importance of maintaining mangrove ecosystems. People are beginning to realize that the existence of mangroves has long-term benefits to the sustainability of their lives. Mangrove restoration activities are carried out through the planting of mangrove seedlings through mutual cooperation. The community together with students and the village government are directly involved in the planting process in the damaged coastal areas.

Community involvement in mangrove planting activities has a positive impact on increasing environmental awareness. The community is not only the object of the program, but also the main actor in environmental conservation activities.

The Sinar Pelajaran Fishermen Group is one of the main partners in community service activities. This group is provided with assistance related to coastal environmental management and sustainable use of marine resources. In addition to fishermen groups, the Waspada Farmers Group is also involved in community empowerment activities. Farmer groups were given an understanding of the importance of maintaining environmental balance in supporting swampland agricultural productivity.

The community empowerment program also includes environment-based waste management training. The community is taught how to sort organic and inorganic waste to reduce pollution of the coastal environment. The implementation of a simple waste sorting site made from local materials received a positive response from the community. This program began to encourage changes in community behavior in the management of household waste that was previously still disposed of carelessly in coastal areas. In addition to waste management, the community was also given training on coastal disaster mitigation. This training aims to increase community preparedness in dealing with coastal abrasion and flash floods that often occur in the coastal area of Simpang Tiga Jaya Village.

From the perspective of Public Administration, community empowerment is an important part of participatory development. Communities that have good environmental capacity and awareness will be better able to support the success of sustainability-based development programs.

Implementation of Appropriate Technology

The application of appropriate technology is one of the innovations in community service activities. The technologies applied include:

- The use of nibung and ironwood in mangrove planting.
- Waste sorting sites are made from local.
- Simple coastal disaster early detection tools.
- The use of this technology is considered effective in increasing the success of mangrove restoration and supporting community capacity building in coastal environmental management.

Increased Environmental Awareness

The service activities show an increase in public awareness of the importance of environmental conservation. The community is beginning to understand that mangroves have ecological and economic benefits in maintaining the sustainability of coastal resources. This can be seen from the increasing community participation in mangrove

planting and maintenance activities. Increasing environmental awareness is an important capital in supporting the sustainability of mangrove restoration programs.

Strengthening Coastal Resilience

Mangrove restoration contributes to increasing the resilience of coastal areas to abrasion and tidal flooding. Mangroves serve as natural protectors of the coast that are able to dampen ocean waves and reduce shoreline erosion. In addition to ecological benefits, the existence of mangroves also supports the sustainability of people's livelihoods through increasing fish and crab habitats in coastal areas.

Analysis of Public Administration Perspective

From the perspective of Public Administration, this service activity shows the importance of collaborative governance in the management of the coastal environment. The success of the mangrove restoration program is influenced by the synergy between the village government, the community, universities, and other stakeholders. The participatory approach is an effective strategy in building community collective awareness of the importance of sustainability-based environmental management. The village government not only plays a role as a regulator, but also as a mediator and facilitator in strengthening the capacity of coastal communities.



Figure 1.1 Synergistic Mangrove Restoration Collaborative Governance

CONCLUSIONS AND RECOMMENDATIONS

Community service activities in Simpang Tiga Jaya Village show that optimizing the role of the community and village government in sustainable mangrove restoration is able to increase coastal environmental resilience and public awareness of the importance of environmental conservation. A participatory approach through community empowerment, training, and the application of appropriate technology is an effective strategy in supporting the success of mangrove restoration programs. The support of the village government is also an important factor in maintaining the sustainability of community-based environmental conservation programs.

Recommendations that can be given are the need to strengthen village policies related to mangrove conservation, increase community assistance in a sustainable manner, and develop environment-based economic programs to support the welfare of coastal communities.

ACKNOWLEDGMENT

The author would like to thank all parties who have supported the implementation of this community service activity.

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